The Hypenoid Moths and Allied Groups.

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The following paper may be considered as a conclusion to that published by this Society in 1883 upon the Noctuæ of North America. As far as the literature is accessible and material allows, I have considered the European and North American forms, whose relationship is so intimate that stable results can never be obtained from their separate study.

The Agrotid Moths.

Since my paper above alluded to, this group has been catalogued in 1890, 1891, 1893 and 1895. In the Washington catalogue (No. 44), the general sequence of the entire family group is based upon my New York list of 1882; the families Thyatiridæ, Noctuidæ and Brephidæ, as limited by me in 1883, being used. In 1895, I separated the Apatelidæ as a distinct family, based on larval characters, and proposed to designate the main group of the owlet moths by the name Agrotidæ, the term Noctua being preoccupied in the birds. The Thyatiridæ are shown by Dyar to be structurally allied to the Platypterygidæ and Geometridæ, from larval characters, and with this I am agreed. They are therefore removed from this series which now stands: Apatelidæ, Agrotidæ, Brephidæ. In my efforts to clear the nomenclature and apply the oldest terms I have endeavored to bring these into conformity with the system employed in general zoölogy. In my *Systema*, August 15, 1895, I have shown that the terms "Macro" and "Micro" apply to certain characteristics, designated by Speyer and Chapman, which we can trace through long series; even Papilio showing "Micro" characteristics, as in the pupal waist. However useful and necessary a study of these characters is in phylogeny, they should be rejected from the nomenclature of taxonomical groups. The terms are generally so little understood that they have been applied quite recently as an index to relative size. I replace the term Microlepidoptera, in a taxonomical sense, by that of Tineides for the superfamily.

There remains here for me to note certain changes in the Agrotinæ since my last list. The genus Harrisimemna Grote turns out, as I expected, to belong to the Apatelidæ, and should be there referred. The genus Raphia, from Dyar's observation on the larva, must be removed from the Apatelidæ to the Hadenini. It seems to be allied to the European Episema, but I have not seen the Spanish species of Raphia, nor compared the American forms with the European genera in question.

The genera Calocampa and Lithomia (Lithomoia) should be referred to the tribe Calocampini Grote, 1890; while the genus Lithophane (= Xylina

of authors, not Xylena of Hübner, Ochsenheimer, Treitschke) should be left with the Orthosiini. The species referred by me to Oligia Hübner should be placed under Monodes Guen., with the type *nucicolor* (*nucicolora*). The species congeneric with the European *Oligia strigilis*, of which we have undoubtedly several in North America, remain to be separated from the species listed under Helioscota. Miana of Stephens is considered synonymous with Oligia, and as having the same type. For the genus Pyrophila, I propose the tribal term Pyrophilini. The genus Amphipyra of Ochsenheimer, iv, 70, 1816, contains : *tragopoginis, tetra, livida, cinnamomea, pyramidea, perflua* (*pyramidina*), *spectrum*. The first six species are taken by Pyrophila Hübner, 1806 (1811), and thus *spectrum* becomes the type. This conclusion can only be affected by a rejection of Pyrophila, for which I know of no sufficient reason. It is about time that subjective opinions, preferences, were abated in the study of the nomenclature of the Lepidoptera. The genus Plusia, as given by Ochsenheimer, iv, 89, 1816, contains *deaurata* and eighteen other species, including Hübner's type, *chrysitis*. This author cites Hübner, and those who refuse to follow this example are accessory to the alienation of Hübner's literary property. Ochsenheimer's genus contains incongruous material. I attempt to sort the species of Plusia of authors as follows, having mainly European material to examine : Plusia Hübn., type *chrysitis*, also *zosimi, chryson, ærea, æreoides* (*æroides* Sm. in error), *balluca, bractea, metallica, æmula, deaurata*. Panchrysia Hübn., with the type *deaurata*, is probably not different. Perhaps different, but slightly as a group, is Chrysaspidia Hübn., 1818, with the type *festucæ*, also *putnami, contexta, venusta* (*striatella*). Agrapha Hübn., unless the type is *glauca*, unknown to me, is synonymous with Plusia. Then comes Autographa Hübn., 1818, with the type *gamma*, also *precationis, rogationis* (*dyaus*), *pseudogamma, iota, circumflexa, ou, fratella, mappa, gutta, V-argenteum, accentifera*. Euchalcia Hübn., type *illustris*, also *modesta, uralensis, consona, cheiranthi*. A decidedly different type is Polychrisia Hübn., with the type *moneta ;* probably here belong *conchis* and *C-aureum*. The American species remain, as I have said, to be sorted over. I indicate only Chrysanympha Grt., with the type, *P. formosa* Grt. The genus Xanthia of Ochsenheimer, iv, 82, 1816, includes *luteago* and sixteen other, often dissonant, species. This author cites Hübner, and would apparently include his type under *cerago*. Under Cosmia, *id*. 84, Ochsenheimer includes *fulvago*, W. V., Hübn , which is = *paleacea* as stated, also *gilvago, abluta, trapezina, diffinis, affinis, pyralina*. To this genus Ochsenheimer also cites Hübner, and includes his type *affinis*. It is evident that the species of Xanthia have been greatly confused ; possibly the similar names, relating to some shade of yellow in these autumn moths, together with the perfunctory affix, has assisted to prevent identification. Not without reason have I protested, following Guenée, against duplication in specific titles in this group ; I just discover that my proposal at one time to take *nictitans* as the type of Apamea, had its origin in a mistake as to the species cited by

Ochsenheimer by this name under Apamea, which is not our common *Gortyna nictitans*, but a species of Oligia. Although Ochsenheimer identifies under Cosmia, the *fulvago* of Hübner, with *paleacea*, there is no necessity here for assuming that the *fulvago* of the Tentamen is really this latter species. In the interest of the synonymy I assume the *fulvago* of the Tentamen to refer to the *fulvago* of Linné, the *cerago* of Fabricius, which is given by name as the type of Xanthia.

Tribe Scolecocampini Grote, 1890. To this group, Mr. J. B. Smith refers the genus Pseudorgyia Harvey, with its type, *versuta*. There can be no objection to this reference, and the genus may follow the genus Eucalyptera, on page 74, of my list of 1895. Apparently allied to Cilla and Amolita, the following may find there place in the same tribe :

Oxycilla, n. g. Tibiæ not spinulated ; anterior tibiæ unarmed ; front smooth ; palpi exceeding the head by about its own length, flattened, obliquely ascending. The venation could not be examined ; the primaries are wide, not narrow as in Doryodes, the accessory cell is present.

Oxycilla tripla Grt. Pale straw-colored, dusted with dark scales on the outer or terminal half of primaries in the female. A medium and an outer, wavy, very faint brown line ; the first of these is oblique beyond middle of cell, the outer line parallel beyond end of cell, about one-third the distance to the margin. Another line half way between this and the margin in female only, of ground color; in male with an inward faint shaded brownish border. Fringe the darkest part of the wing, preceded by faint narrow terminal brown venular dashes. Secondaries shaded with brownish especially outwardly. Types in coll. Neumœgen, under the name *Rivula tripla* Grote. My studies on the species were interrupted by the state of my health, and I left it with the name attached to the specimens under which it is quoted by Mr. J. B. Smith, in the Catalogue of 1893. This and the following were among the Arizona material in the collection, and their relation to Rivula, which is also referred here by Mr. Smith, is not ascertained.

Zelicodes linearis Grote (Litognatha). The female type was referred by me doubtfully to the Deltoid genus and Mr. J. B. Smith rejects it from the group. The characters of Zelicodes agree with Oxycilla, till we come to the palpi. These are shorter, scarcely compressed, the terminal joint minute. I am indebted to the kindness of Mr. Harrison G. Dyar for notes on the species which enable me to publish them. The relationship of these small, frail, pale colored forms, which have a superficial resemblance to the Pyralidæ, and Hypeninæ, cannot be fully made out until material is accumulated for dissection. I have described the structure and neuration of our Eastern *Cilla distema* quite fully, as also Amolita (*N. Am. Ento.*, i, 99, 100, 1880). It seems to me that we can hardly include Rivula with this type. According to Mr. J. B. Smith it "lacks the accessory cell and vein 10 of the primaries arises from the subcostal as in some of the Deltoid genera." The value of the characters of vein 5 of the secondaries has been impeached by Mr. Smith when I used

it in correcting his reference of Cerathosia to the Arctiidæ, so it need not detain us here. The hind wings of Rivula agree, according to Smith, with the "Trifidæ." Mr. Tutt, in his *Stray Notes on the Noctuidæ*, calls the reference of Herrick-Schaeffer of Rivula "inexplicable," so it may be dismissed as an example of the fact that neurational characters should not be too literally interpreted. But Dr. Chapman writes that Rivula is not a Deltoid, and as positively not belonging to the Pseudoipsidæ or Nycteolidæ, from which I may say the shape of the wings decidedly removes it. Since I am not willing to place it in the same tribe with Cilla, from the details of neuration, it may be separately placed in the new tribe, Rivulini m. The relationship of Oxycilla and Cilia to Rivula must be left for future study. I publish the names here as they have been cited in catalogues. All such unpublished names of mine are now exhausted.

In a pamphlet, kindly sent me by Mr. William Schaus, occurs the mention of a genus "Alibama," which I do not recognize and cannot trace. If it has the same derivation as Alabama Grt., 1895, and is different, then the latter may be called *Eualabama*. The species *Orthosia purpurea*, No. 779, is wrongly written *perpura*. If *crispa* of Harvey is a variety of this, then it is most certainly worthy of the varietal name. I really do not know what varietal names are for, if they are not to be employed as designating forms so distinct in appearance as *crispa*, *specialis* and *gularis*. To lump these under a common title is to ignore a category of facts which our nomenclature was invented to designate. The black, suffused specimens of my *Andropolia olorina* from California in the Hy. Edwards collection, now in charge of Mr. Beutenmüller in the American Museum, Central Park, should bear the label var. *australiæ* Grt.

On page 69 of the Catalogue, Mr. Smith says: "In the British Museum, Mr. Butler has placed a lightly marked specimen of *turris* Grt., with typical *saucia*, and has published them as identical." There are several other criticisms of Mr. Butler's determinations to a similar effect, but I have never seen Mr. Butler's papers, and since Mr. Smith has apparently corrected these mistakes, so far as the North American species are concerned, they need not be entered upon here. There is only one of these instances in which it is possible Mr. Butler is correct, the identity of our North American *Agrotis dolis* with *Agrotis birivia* Hb., from the Alps. I have not compared specimens and the figures of the latter do not recall to me the former. Mr. Smith seems to regard *birivia* as the type of Chera, and as this term may have been misapplied by Mr. Butler, I give the genus from the *Verzeichniss*:

CHERA.

1818 (1816–1822). Hübner, *Verzeichniss*, 211. *Serratilinea* (this first species has hairy eyes and is an aberrant Mamestra from the Alps and Siberia), *fugax* (*lucernea*), *renigera* (these three names apply to distinct species of Agrotis from the Alps, Austria, Russia and Hungary, all un-

nown to me, and whether they belong to the subgenus Carneades, or whether Chera has been restricted to any one of these I cannot say), *templi* (this latter is the type of Dasypolia Guen.). There is no mention of *birivia* under Chera.

Rhyacia.

1818 (1816–1822). Hübner, *Verzeichniss*, 210. *Lucipeta birivia*. This term has priority over Chera, if the latter is to be restricted to the contents which are Agrotis sp. It seems, on the surface, that Mr. Butler's use of Chera should be changed to Rhyacia, but whether these five species of Agrotis belong to the same subgenus is not certain. In no event can *birivia* be the type of Chera. I make no reference of type to either of these names, leaving the matter to those who have the material and the literature. I have not examined these gray Alpine species to see if they share the clypeal tubercle of Carneades. As stated by me, there are primarily three structural types in Agrotis. 1. Front smooth, fore tibiæ unarmed. 2. Front smooth, all the tibiæ armed. 3. Front tuberculate, all the tibiæ armed (Carneades). I have never doubted, when the clypeus was properly examined, that species belonging to my genus Carneades would be found in Europe, but I am the first to detect the character and to insist upon a comparison of all the forms to establish these divisions. There are so many names in Hübner that Carneades can hardly be preserved, it would be almost a miracle. But if it falls I wish to have it distinctly understood that I based my genus upon absolute character, and that Mr. Smith's statement that it was founded in "ignorance" is an incorrect assertion. I distinctly oppose the use of modifications of the genitalia as being of generic importance (of themselves sufficient to support generic titles) in the Agrotidæ for reasons already fully given elsewhere.

Finally, with regard to *Fruva obsoleta*, I have recorded it as a variety. It is very distinct from *fasciatella*, being perfectly plain, and Mr. Smith's remarks upon it show that he has made but a superficial examination of my types, Catalogue, 302. On the contrary, I found structural differences between the two in *Can. Ent.*, and it seems that we should consider it as a distinct species, unless these observations of mine are properly contradicted. In any case it is an easily recognized form and should have a distinct name.

The Catocaline Moths.

As stated by me in 1883 there are, roughly speaking, two distinct types of ornamentation in the geometriform Agrotidæ, or Catocalinæ. In the first, the lines of the primaries are not distinctly continuous over the secondaries, which are thus more or less distinctively marked, as in Euclidia and Catocala; in the Ascalaphini the hind wings have the general color, but the lines of fore wings are usually wanting, this feature fails in *Pleonectyptera pyralis* an aberrant form which has been referred to the Her-

miniini from the "interesting leg structure figured by Zeller." In the second the lines are continuous, the resemblance to the Geometridæ is marked, not only in the rivulous lines, but in general color, and even contour. At the same time the resemblance between aberrant geometrid moths in the European fauna, such as *mæniata* and *plumbaria*, with North American Euclidiini is so striking as to have induced Hübner to figure our species as Geometridæ; this author also refers our *Arctia rubicundaria* to the Geometrid genus Crocota. Examples of the second type of ornamentation are Thysania and Pheocyma (= Homoptera). In the Thysaniini the extreme limits in size within the Order is reached; the fore wings are greatly elongated, the body vestiture lies close, the eyes are large, head and palpi well developed, while the large lateral expansion of the wings fit the moths for extended flights. Thysania and Letis are wind-visitors over our territory from intertropical America; Erebus may breed in Texas or Florida, in Arizona and the Southwest. The name of the tribe cannot be taken from Latreille's genus, Erebus, since it becomes in this case a duplication of the title of the diurnal group of which Erebia Dalman is typical. I have arranged the tribes on comparative characters of the moths, but a classification seems also possible upon the prolegs of the larvæ, which vary in number from twelve to sixteen. The observation made by me on the larva of Apatela is repeated by Prof. Brooks on certain Crustacea, in which "the free prolonged larval life has brought about modifications which have no reference to the life of the adult, so that the larvæ differ among themselves more than the adults do." But the suppression of the prolegs in the Catocalinæ, especially in the Boletobiini, where it reaches its maximum in Boletobia and Aventia, would seem to be of phylogenetic importance. The larva of Catocala seems to mimic bark or branchlets, thus like that of the Geometrid genus, Eubyja.

Tribe Euclidiini, type *Euclidia glyphica*, "Grass Moths:" Euclidia, Drasteria, Cænurgia, Dysgonia (type *algira*, and here I suspect belong our *smithii* ♂ = *consobrina* ♀, *concolor*), Panula, Agnomonia, Poaphila (type *sylvarum*), Phurys, Parallelia, Phoberia, Celiptera (Litomitus).

Tribe Melipotini, Synedoida (Cissusa may belong to the preceding), Melipotis (Bolina), Hypocala, Litocala, Syneda, Cirrhobolina. The genera Hypogramma, Capnodes and Agassizia are unknown to me. A distinction between these two tribes may be difficult.

Tribe Eulepidotini, type *Eulepidotis alabastraria:* Palindia, Eulepidotis.

Tribe Stictopterini: Stictoptera, Magusa.

Tribe Ascalaphini, type *Ascalapha lunaris:* Ascalapha, Strenoloma, Siavana, Panopoda (*rufimargo* and *carneicosta* are not varieties, but distinct species), Fagitana (Pseudolimacodes), Argillophora, Remigia, Pleonectyptera, Antiblemma, Anticarsia.

Tribe Catocalini, type *Catocala fraxini:* Catocala, Andrewsia, Allotria.

Tribe Ophiderini, type *Ophideres materna:* Euparthenos, Ophideres.

Tribe Toxocampini, type *Toxocampa ludicra:* Toxocampa, Eutoreuma.

Tribe Thysaniini, type *Thysania agrippina:* Thysania, Letis, Erebus.

Tribe Pheocymini, type *Pheocyma lunifera:* Zale, Pheocyma, Pseudanthracia, Ypsia, Campometra (Eubolina), Trama, Pericyma, Selenis, Yrias, Homopyralis, Matigramma, Spargaloma.

Tribe Pangraptini, type *Pangrapta decoralis:* Zethes, Phalænostola, Pangrapta, Sylectra. The distinction is based on the superficial character of the angulated wings; Sylectra has a remarkable antennal structure and a vague resemblance to Scoliopteryx; in 1809 Latreille refers it to Herminia.

Tribe Hexerini, type *Hexeris enhydris:* the single genus Hexeris, from tropical Florida.

Tribe Boletobiini: Boletobia, Aventia, Dyaria, Acherdoa.

A correlation of these tribes with Guenée's families is in part possible, but since I do not regard these groups as of family, or even subfamily value, it is not necessary to attempt it.

The Hypenoid Moths.

This group is classed by me in 1890 as a subfamily of the Agrotidæ under the name Deltoidinæ, a corresponding modification of the previous terms, Deltoides and Deltoidæ of Latreille and Guenée. The name Deltoidinæ is objectionable, however apposite, there being no genus of the name from which it could be derived. I shall therefore call the group Hypeninæ, from Hypena, the typical genus of a group, which is called by some writers by the English term, "Snout Moths," in allusion to the projecting labial palpi. These pyralidiform or hypenoid moths form a tolerably compact and very interesting group, from the usual strong expression of secondary sexual characters. In 1890 I divided it into two tribes, Herminiini and Hypenini, and these are here retained, Mr. Smith's Heliini the not being sufficiently distinct, since the male character drawn from the first joint of the front feet is analogous to the other modifications of the appendage in the Herminiini. The term itself could not be retained in any event, since it is derived from the generic term Helia of Guenée, which is not only a synonym, but preoccupied also.

My conclusions upon a study of the literature of the subfamily Hypeninæ are here given:

Polypogon.

1802. Schrank, *Faun., Boica,* ii, 162: *barbalis, tentacularis.*

The type must be taken as *barbalis,* although I have thought the contrary opinion tenable; but it seems to follow from Latreille's subsequent action, or rather the accepted interpretation of his action in 1805. I had supposed, recently and from the quotation of 1802 to Herminia in the Washington Catalogue, that Latreille's generally accepted term might really be the earliest in the group. But this is not the case, and Polypogon Schrank is the first. It would, indeed, be better to consider *tentacularis*

the type, but see my remarks under Herminia, which explain the confusion between the two species, *barbalis* and *tentacularia* (*tentacularis*). Under this restriction of Polypogon, the later term Erpyzon Hübn., 1806, falls as a synonym.

HERMINIA.

1809. Latreille, *Gen. Crus. Ins.*, Tome iv, 228 : "*Herminia barbalis* Latr., *Hist. nat. des Crust. et des Insectes*, tome xiv, 227 ; *Crambus barbatus* ♂, *Cr. tentacularis* ♀ ; *Herm. rostralis* Latr.; *Cr. rostratus* Fab.; *Herm. proboscidalis ; Cr. proboscidens, ensatus* Fab.—*Phal. ericata* Cram., *Cr. adspergillus* Bosc., Coq., *Hyblæa sagitta* Fab., *Phal. orosia* Cram. *Obs.* Antennæ sæpe ciliatæ aut subpectinatæ in uno lexu infra incrassatæ aut in medio dilatatæ uninodosæ."

From this it is only clear, that Latreille considered *barbalis* as the ♂ and *tentacularia* (*tentacularis*) as the ♀ of the same species. Also that he did not consider Hypena and several other genera, *i.e.* Sylectra, Hyblæa, etc., as distinct. Only the general reputation of his work (published in Paris) seems to have floated his term Herminia ; this has been used later, by Lederer, Standinger, etc., and good authorities in the sense that *tentacularis* was typical.

The original citation for this genus is "Latreille, *Hist. Nat. d. Crust. et d. Insectes*, T. xiv, Par. an xiii, 1805." This work is not in the library of the university, and I cannot again consult it at the moment. But the citation above, given by Latreille four years later, of his original work, shows that "*barbalis* Latr.," of 1805, is explained to mean "*barbatus* ♂, *tentacularis* ♀." Mr. Smith gives : 1802. Latr., *Gen. Crust. et Ins.*, iii, 413, et iv, 2281." I think this citation must have been copied ; Tome iii contains Hymenoptera. It does not then follow that Mr. Smith has examined all the works catalogued by him ; although such examination is, as Mr. Smith truly says, the basis of good work in any science, as this implies a knowledge of what has been done in the past. But I think that the works not examined by Mr. Smith might have been specially marked. I do not know where "iii, 413," was obtained ; "iv, 2281," seems to be an exaggeration of my citation as above, "iv, 228," and would argue the existence of a rather voluminous work.

Latreille's diagnosis, above given, must lead us to consider either *barbalis* or *tentacularia* as the type of the genus Herminia. I have proposed to take *tentacularia*, because there is no apparent impediment to this course, and it does not disturb the accepted Continental nomenclature. The earlier Polypogon is founded on *barbalis* and *tentacularia* regarded as *distinct* species ; Herminia is founded primarily on *barbalis* and *tentacularia* regarded (incorrectly) as the *same* species. According to this view Erpyzon Hübn., and Pechipogon Lederer, nec Hübner, are synonymous with Polypogon Schrank ; a term which has been unaccountably neglected. In the "Revision," Mr. Smith adopts my previously expressed opinion, that *tentacularia* is the type of Herminia. It is clear

that the European species must be revised. They fit in everywhere with the American. The question is further narrowed by the apparent fact that *barbalis* and *tentacularia* are types and sole species; they stand alone by themselves, none of the species heretofore associated with them having strictly the same structure or combination of characters. Were their generic distinction not admitted, the term Polypogon would have to be used for a combined genus, and Herminia be dropped. Should Polypogon be preoccupied, then the combined genera would take the name Herminia, since this is earlier than Erpyzon of Hübner.

ERPYZON.

1806 (1811). Hübner, *Tentamen*, 2: *barbalis*. This is sole species and therefore type.

The term, being later than Schrank's or Latreille's, falls before either. It could only be used in the case, that *barbalis* and *tentacularia* being held to belong to distinct genera, Schrank's term for the former proved unavailable.

PARACOLAX.

1816 (1825). Hübner, *Verzeichniss*, 344: *tarsicrinalis* (*barbalis* in error), *tarsiplumalis*, *grisealis*, *devialis*.

This term might have been used instead of Zanclognatha by Lederer, since this author refers *devialis* to Herminia, and includes all the rest in his new term. A discussion of the type follows later.

PECHIPOGO.

1816 (1825 ?). Hübner, *Verzeichniss*, 345: *barbalis* (*plumigeralis* in error), *pectitalis*.

This name, altered to Pechipogon, is erroneously used by Lederer and Staudinger for *barbalis*. *Pectitalis*, unknown to me, may be the type.

ÆTHIA.

1816 (1825?). Hübner, *Verzeichniss*, 339: *emortualis*, *circulata*.

For this name *circulata* is type. Guenée takes out *emortualis* as the type of Sophronia, which Speyer wrongly records as a synonym of Æthia.

The following is an attempt to arrange the Palearctic species. Unfortunately I have only part of the European and no American specimens at the moment for study:

1. Male antennæ thickened or nodose, palpi recurved, fore legs modified and tufted: *Zanclognatha tarsiplumalis*, *tarsipennalis* and the American species.

2. Male antennæ not thickened, palpi recurved, fore legs modified and tufted: *Paracolax grisealis*, *tarsicrenalis*. *Griscalis* may be type.

3. Male antennæ with very short pectinations, palpi in the male bent

upwards, in the female extended, shorter than in Herminia; accessory cell aborted. There is apparently only one species: *Polypogon barbalis.*

4. Male antennæ specialized with long pectinations continuous to base; palpi long, extended forwards in both sexes, terminal joint recurved; fore legs untufted. There is apparently only one species: *Herminia tentacularia.*

5. Male antennæ with lengthy pectinations, specialized at basal third, thence to the base with pectinations obsolete; palpi extended forwards or slightly bent: *Litognatha absorptalis* (*nubilifascia*), *cribrumalis.* The genus Sisyrhypena is retained as distinct upon the wing shape, pattern and color. Pallachira is apparently only different by ornamentation, and may be united with Litognatha, or retained as distinct as a matter of convenience. I do not know *gryphalis* or *crinalis,* and cannot make out whether they belong to Chytolita or not.

6. Male antennæ not specialized, pectinate; fore legs tufted; palpi extended, variable in length: *Philometra metonalis, eumelusalis, derivalis.*

Hypena.

1802. Schrank, *Fauna Boica,* ii, 163. *Proboscidalis, rostralis, palpalis.*

1816 (1825?). Hübner, *Verzeichniss,* 345. *Palpalis, decimalis, obsitalis, rostralis.*

1874. Grote, *List N. Am Noct. Bull. Buff. S. N. S.,* 52. Takes *rostralis* as type.

I find no objection in literature to this course; the date is wrongly given by me in 1874 as 1801; possibly the term is older than Schrank's work, but I have not traced it. The Californian species are typical Hypena; *evanidalis* resembles more nearly *obsitalis.* The genus, as established by Lederer, contains incongruous material.

Bomolocha.

1816 (1825?). Hübner, *Verzeichniss,* 343. *Crassalis* (*fontis*) *antiqualis, terriculalis.*

Lederer in 1857 uses this term for *fontis* alone, which thus becomes type.

1874. Grote, *List N. Am. Noct. Bull. Buff. S. N. S.,* 51. Designates *crassalis* (*fontis*) F. as type.

Hübner's *crassalis* Samml. is referred to *obesalis;* but as he distinctly quotes Fabricius, species, which is *fontis,* in the *Verzeichniss,* the true *crassalis* Fabr. becomes type.

Macrochilo

1816 (1825?). Hübner, *Verzeichniss,* 345. *Tentaculalis, proboscidalis, rusticalis, cribralis.*

Tentaculalis is taken by Polypogon; *proboscidalis* (see Grt., *List,* 1874,

52) possibly belongs to Meghypena ; *cribralis* (*cribrumalis*), perhaps, is a Litognatha (see *ante*); there remains *rusticalis* Zutr., 375–6, as type of Macrochilo.

SALIA.

1806 (1811). Hübner, *Tentamen*, 2. *Salicalis*, sole species and therefore type.

1875. Grote, *Bull. Buff. Soc. Nat. Sci.*, ii, 223. Uses this generic name for *interpuncta* and refers *salicalis* as the type.

1893. Smith, *Cat. Noct.*, 384, uses this term for *interpuncta* and *rufa*, and refers to *Verzeichniss*, 339, for the generic term ; but this is incorrect, as in the *Verzeichniss* there is no genus of the name; the latter is there employed only in the plural form to designate a Stirps (Saliæ). The following is the *Verzeichniss* name for *salicalis :*

COLOBOCHYLA.

1816 (1825?). Hübner, *Verzeichniss*, 344. *Salicalis*, sole species and therefore type.

The name falls before Salia ; it has only been used by Zeller in 1872. It is misprinted Calobochila by Smith (*Cat* , 384). Madopa Stephens is synonymous. Zeller writes Colobochila in correction of Hübner's spelling.

The Hypenoid Moths of North America and Europe are closely related, so much so, that if the American collector found the European species upon his home excursions in the field, they would hardly present him a form unrelated to what he already knew. Conversely it is but few genera out of the American fauna which would strike the European collector as "exotic." Perhaps the Southern element in the N. American fauna, genera with a coil of hair on the male antennæ, with sharp apices of primaries, is the strangest ; or such odd forms as Palthis, Dercetis, or Eulintneria, which have no analogues in Europe. The mass of forms resemble each other in the two worlds and here again the new is remarkable for its excess in species, as in Bomolocha. Representative species occur freely, as *Bomolocha baltimoralis*, *Epizeuxis americalis*, *Salia interpuncta*. The occurrence of distinct species of typical Hypena in California belongs to the same class of facts as the occurrence of Saturnia, and I have offered a probable explanation for this feature of geographical distribution in the order.

Genera should, ideally, contain species of which the evidence is that they are phylogenetically connected in time. When we study the divergence in representative species we are met with the fact that the pattern of ornamentation and then the color have a persistency superior to details of structure, as, for instance, the forms of the *genitalia*. Genera are opinionative to a certain degree ; as compared with species they have naturally less fixity. Thus the importance of deciding upon a particular species as the type of the generic title becomes obvious. Without this

guide, no approximate uniformity is attainable in our systems of nomenclature. As a rule, in selecting generic characters, more stress should be laid on those not prominently affected by special needs in the struggle for existence. Such are more liable to modification, while each modification or variation, working in a given direction and correlated with habit, is temporarily fixed by inheritance. It must be to the working of this law distinctively that species exist. Variation may be called forth by natural selection, or by dynamic forces, but only heritable characters can persist. Reversion, as I have said elsewhere, is only inheritance at a distance. When inheritance has rendered permanent for a time a new modification, it does not eradicate all trace of former equally and relatively permanent states in the past history of the organism. Given conditions in some way resembling the former, which produced an older modification, then the tendency is to bring the older modification to the surface. It follows from the observations already made, that all the cells are essentially recipient. As long, then, as genera are not based upon characters of phylogeny, they will remain matters of opinion, or again of convenience.

In the Hypeninæ there is a tendency in the males to develop extraordinary secondary characters. These are not confined to a single organ, but affect the appendages in general. These structures are partly useful to the insect and adaptive and are rather of specific than generic value. For generic characters should clearly be chosen from those not favoring the idea that they have arisen from a change of habit or from the tendency to produce extraordinary structures in a given direction. The usual sexual differences in the moths, pectinated and simple antennæ, here extend to other regions of the body ; none the less are they of similar morphological importance. The antennæ are modified in Zanclognatha, Chytolita, Renia, Bleptina; the palpi in Palthis; the wings in Plethypena and Gaberasa. But the most common and extraordinary variations are presented in the structure of the front pair of legs. All these features have been fully described in the late *Revision* by Mr. J. B. Smith for the American species, and in calling attention to them, the object here is to suggest that their value in uniting species under one genus may be overestimated. Species which present similar ornaments to the anterior legs, but which show other, apparently minor, because less striking differences, in other parts of the body, should not be considered as congeneric of a necessity. The tendency in the group to present exaggerated tuftings on the front legs, or abortion of the front tarsi, may be exhibited along different immediate or generic lines of descent. So, in Sisyrhypena, the peculiar "wing form and color" are quite sufficient to authorize a different genus from Litognatha. In my opinion the strange pattern of Pallachira might allow a separate generic title.

Among the forms which have been incorrectly referred to the present group is *Nycteola revayana* (*undulana*). Dr. Chapman writes me, that the egg is very much the same as that of *Pseudoips bicolorana*. That is, it is like an Acronycta egg, but flatter and with more numerous ribs. The

larva has similar feet to Pseudoips, flat, seal-paddle shape; it is much more active than Pseudoips and makes a web, giving color to the old reference of the moth to the Tortrices. The cocoon and pupa have much resemblance to those of Pseudoips. I may add, the shape of the wings and the venation offer peculiar characters. There seems to be little doubt that the moth is not Hypenoid, nor would I consider it an Agrotid at all. In fact I prefer to consider Nycteola neither a Pseudoips nor an Agrotid, but as representing a distinct family, oscillating between the Pseudoipsidæ and Chlamyphoridæ. I am inclined to lay some stress on geographical distribution in these matters. The Pseudoipsidæ and the Anthroceridæ are peculiar to the Old World, just as the Citheroniidæ and perhaps the Lacosomidæ are exclusively American. But Rivula and Nycteola are clearly descended from the same preglacial fauna with our other N. American representative forms. It seems probable that the Pseudoipsidæ in Europe appeared at a different epoch upon the scene of their present distribution and were not included in the preglacial arctic fauna at the time of its disintegration by the first Ice Period.

The study which Dyar kindly communicates to me upon *Nycteola undulana* (*revayana*) bears out its relationship to Pseudoips and narrows its claim to be considered a distinct family still more. By this in the larva of Nycteola tubercle iv is remote from v, behind the spiracle or nearly so, the subprimary retæ present, a leg plate instead of tubercle vii. The larva thus clearly belongs to the superfamily Agrotides. The setæ are all single, no secondary ones and the legs are normal. Nycteola is thus restricted to the Agaristidæ, Noctuidæ, Pseudoipsidæ or Ptilodontidæ. Some of the Arctians and Lithosians have the warts degenerated to single retæ, but Mr. Dyar detects no evidence of degeneration in Nycteola. In the moth the resemblances lie with the Pseudoipsidæ. The venation is similar, especially the stalking of veins 3–4, the origin of 8 on hind wings; 6 and 7 from cell on fore wings. I rely on the shape of the wings, the minor differences of neuration, the somewhat different larval habit to sustain the family rank. The palpi, very different from Pseudoipsidæ, approach the *Chlamyphoridæ* (*holidæ*). It seems likely that the three groups are related, but have separated as long ago as perhaps the Miocene, certainly long before the Ice Period. They appear as strange elements when associated now in one "family," and are perhaps best kept apart in our classifications. The genus Sarrothripa of Curtis is a synonym of Nycteola Hübner, 1806 (1811).

In the *Canadian Entomologist*, 158, 1895, I have criticised the methods employed by Mr. J. B. Smith in identifying the "types" of the late Mr. F. Walker in the British Museum. The immediate occasion was the identification of *Acronycta cristifera* of Walker with my *Mamestra lubens*, and I believe my evidence is decisive. Further instances of error are offered by Mr. J. B. Smith in his recently published *Revision*. On page 392 of the *Catalogue*, Mr. J. B. Smith reports the result of the examination of the "type" of *Hypena* (?) *idæusalis* Walker, and positively identifies it with

my *H. citata,* referring the latter as a synonym. On page 108 of the *Revision* Mr. Smith says, in contradiction : "In my studies in the British Museum I *found* a specimen which I *took* as the type of *idæusalis* Walker, and which I *considered* the same as *H. citata* Grote, and so referred it in my catalogue. Mr. Butler writes, later, that this is a mistake and that Walker's species is not even a Hypena. The description somewhat bears out Mr. Butler's statement and I have apparently made some mistake, though how I cannot conceive." The italics are mine and render any further comment superfluous, since the whole matter proves my assertion, that the identifications were made on occasion, perhaps generally, without reference to the descriptions in the Lists. Since Mr Smith admonishes me "that Walker's identifications, even of his own species, are entirely untrustworthy," and since Walker's "types" have no type labels and his peculiar methods of describing have been disclosed by Mr. Smith and Mr. Butler, since, finally, these "types" have been shifted by a non-specialist in the group and are no longer as Walker left them, there is ground for rejecting Mr. Smith's identifications, supported by the fact, that Mr. Smith admits two of them in this group to be erroneous. But what we need is a working nomenclature, and I would not impede the attainment of this result by needless opposition, having been one of the earliest working lepidopterists to hold that Walker's badly founded names should be accepted as if properly founded. Still we should not *per force* apply his badly founded names merely to rid our lists of unidentified descriptions. In referring *Homoptera herminioides* to *æmula,* in this subfamily, Mr. Smith has laid himself open to the charge.

I give now my reasons in full for rejecting "Hormisa" as used by Smith. First I copy the description from the B. M. Lists : "Hormisa (xvi, 74). *Male.* Body slender. Frontal tuft prominent, acute. Proboscis very short. Palpi long, slender, compressed, slightly pilose, obliquely ascending, *third joint lanceolate,* less than half the length of the body. Antennæ *slightly pectinated,* about half the length of the body. Thorax squamous with *closely applied hairs.* Abdomen extending rather beyond the hind wings. *Legs slender, bare ;* hind tibiæ with long spurs. Wings moderately broad. *Fore wings rectangular at tips,* rather oblique and hardly convex along the exterior border."

From this description it is certain that it absolutely contradicts Litognatha in every essential point given and here italicized by me. Litognatha has lengthily pectinated antennæ, with specialized nodose processes at basal third. The legs in male are not bare, but very remarkably tufted in the male, which sex Walker describes (see my figure and original description) ; the last joint of the palpi is not "lanceolate ;" the thorax is not clothed with "closely applied hairs;" the fore wings are not "rectangular at tips," but pointed. But, in each and all of the above statements, the diagnosis agrees with *Epizeuxis æmula* or *americalis,* and this in *exactly the points in which it contradicts Litognatha.* It is certain that Walker drew it up on a specimen of Epizeuxis. It is a rule of zoölogical nomen-

clature that a generic title, defined by a description, cannot be applied to a species which this definition absolutely contradicts. I, therefore, in reason and under the rules reject Hormisa as applied to Litognatha and refer it as a synonym of Epizeuxis. I can look with confidence that my action will be sanctioned by lepidopterists both in America and Europe. It appears to me without doubt correct; since the application of a generic title must not be contradicted by the generic definition.

While the generic title, Hormisa, is thus clearly to be rejected, I am inclined to adopt *absorptalis* for the species. The description is incomplete and *contradicts nubilifascia* in the "denticulated" interior line; in my species it is wanting usually, when present fine and even. The reniform cannot be described as "brown, punctiform;" it is represented by two black dots merely. The descriptions of the lines on secondaries do not agree with *nubilifascia*. Agreement is shown in the description of the exterior and submarginal lines on fore wings, in the fact that the upper surface is given as paler than under. No mention is made of the discal dots. It is not impossible that Mr. Smith has made some "unexplainable" mistake, arising from a subjective desire to break down my names, as in the case of *idæusalis*. But I content myself here with rehabilitating my generic title and I leave the matter of the species to the decision of later writers who will judge the whole case without feeling. It seems to me probable that Walker, after describing his genus from a specimen of Epizeuxis, finally removed this type, but not before it was seen by Grote and Robinson in 1867, and that the species *absorptalis* was really described by him under a generic diagnosis previously and disconnectedly drawn up.* His persistent use of Hormisa for other species of Epizeuxis would be thus explained. In 1867, there was apparently much more mixing of species under one name than now comes out after Mr. Butler has sorted† the insects over, and Mr. Smith has "taken" them for Walker's "types."

In 1867, I pointed out the fact to Mr. Walker, standing with him over the drawers, which he was still "arranging," that in a number of instances he had more than one species under a title, and he nervously admitted the fact. I was then but a young tyro and my knowledge of our species was slight. I had previously sent Mr. Walker at least one hundred species for comparison, and I have his "determinations" yet, which even at the time, in 1863–4, surprised me and set me thinking. Walker and Guenée, I believe neither of them, furthered the work of American lepidopterists by their descriptional publications.

* Consult the account of Walker's methods of working, *Cat.*, 1893, p. 7. This covers the case of Hormisa exactly. European lepidopterists would never be agreed to accept a genus founded on *Epizeuxis æmula* for *derivalis*.

† See *Cat.*, p. 8, where Mr. Butler has marked specimens which he "considers" as Walker's types.

Family Agrotidæ.
Family type : *Agrotis segetum.*
Subfamily Hypeninæ Grote, 1895.
Subfamily type : *Hypena rostralis.*
(=Deltoides Latr., Deltoidæ Guen., Deltoidinæ Grt., 1890.)
Tribe Herminiini Grote 1890.
Tribal type : *Herminia tentacularis.*
(=Heliini et Herminiini Smith, 1895.)

Gen. Pseudaglossa Grt., 1874.
Type : *P. lubricalis.*

1. *lubricalis* Geyer. U. S. generally ; Can. to California.
   phœalis Guen. (Helia).
   surrectalis Walk. (Bleptina).
   var. *occidentalis* Sm.
2. *scobialis* Grt. Canada to Middle States.
3. *denticulalis* Harvey. Canada to Texas.
4. *rotundalis* Walk.
   rotundalis Walk. (Hormisa).
   borealis Sm. (Helia).
   forbesii French (Pseudaglossa).

Gen. Epizeuxis Hübn., 1818 (1825 ?).
Type : *E. calvaria.*
(=Hormisa Walk., 1859.)
§§ unnamed section.

5. *laurentii* Sm. North Carolina.
6. *majoralis* Sm. Middle States.
   ? *herminioides* Walk. (Homoptera).
7. *æmula* Hübn. N. America, east of Rocky Mts.
   mollifera Walk. (Microphysa).
   effusalis Walk. (Hormisa).
   concisa Walk. (Hormisa).
   Epizeuxis, typical section.
8. *americalis* Guen. Canada to Texas ; New Mexico.
   scriptipennis Walk. (Microphysa).

Gen. Zanclognatha Lederer, 1857.
Type : *Z. tarsiplumalis.*
Subgen. Megachyta Grote, 1873.
Type : *Z. lituralis.*

9. *lituralis* Hübn. Canada to Florida and Texas.
10. *theralis* Walk. Canada to Southern States ; Arizona.
    deceptricalis Zell.
    var. *gypsalis* Grt.
11. *inconspicualis* Grt. New York ; Adirondacks.

11½. *minoralis* Sm. New York.
♂ sp. præc. ?

Subgen. Cleptomita Grt., 1873.
Type : *Z. atrilineella.*

12. *atrilineella* Grt. Texas.
13. *lævigata* Grt. Canada to Southern States ; Dakota.
obsoleta Sm.
14. *punctiformis* Sm. District of Columbia.

Subgen. Zanclognatha Led.

15. *cruralis* Guen. Canada to Southern States ; New Mexico.
jacchusalis Walk.
16. *obscuripennis* Grt. New York to Alabama.
17. *protumnosalis* Walk. Canada to Middle States.
minimalis Grt.
18. *marcidilinea* Grt. Canada to Southern States.
19. *ochreipennis* Grt. Canada to Southern States.

Gen. Pityolita Grt., 1873.
Type : *P. pedipilalis.*

20. *pedipilalis* Guen. Canada to Central States.

Gen. Litognatha Grt., 1873.*
Type: *L. nubilifascia.*

21. *absorptalis* Walk. Canada to Southern States.
nubilifascia Grt.
22. *litophora* Grt. New York ; Central States.

Gen. Pallachira Grt., 1877.
Type : *P. bivittata.*

23. *bivittata* Grt. Canada to Central States.

Gen. Sisyrhypena Grt., 1873.
Type : *S. pupillaris.*

24. *orciferalis* Walk. Middle States to Texas.
pupillaris Grt. (Sisyrhypena).
hartii French (Pallachira).

Gen. Philometra Grt., 1872.†
Type : *P. longilabris.*

25. *metonalis* Walk. Canada to Virginia.
goasalis Walk.
longilabris Grt.
goasalis Sm.

* This is =Hormisa Sm. nec Walker. The name Litognatha should be used for the genus as extended by Smith, and including the species here kept separate under Pallachira and Sisyrhypena.

† There is a genus "Phyllometra Dup.," which, however, has a different derivation and under the rules my term need not be changed.

26. *eumelusalis* Walk. Canada to Virginia.
serraticornis Grt.

Gen. Chytolita Grt., 1873.
Type: *C. morbidalis.*

27. *morbidalis* Guen. Canada to Virginia.
28. *petrealis* Grt. Canada to Virginia ; Brit. Col.; Dakota.

Gen. Bleptina Guen., 1854.
Type: *B. caradrinalis.*

29. *caradrinalis* Guen. Canada to Texas ; New Mexico.
cloniasalis Walk. (Herminia).
30. *medialis* Sm. "Semi-tropical Florida."
31. *inferior* Grt. Virginia, southwardly.

Gen. Tetanolita Grt., 1873.
Type: *T. lixalis.*

32. *mynesalis* Walk.
var. *lixalis* Grt.
33. *floridana* Sm. Florida and Texas.
34. *palligera* Sm.* California.

Gen. Renia Guen., 1854.
Type: *Renia discoloralis.*

35. *salusalis* Walk. Canada to Southern States.
brevirostralis Grt.
salusalis Walk. (Herminia).
36. *discoloralis* Guen. Canada to Virginia.
fallacialis Walk. (Hypena).
generalis Walk. (Hypena).
thraxalis Walk. (Herminia).
37. *fraternalis* Sm. Southern States.
38. *sobrialis* Walk. Canada to Southern States.
restrictalis Grt. (Renia).
39. *larvalis* Grt. Central and Southern States.
40. *clitosalis* Walk. Canada to Virginia.
centralis Grt. (Renia).
41. *factiosalis* Walk. Canada to Virginia.
plenilinealis Grt. (Renia)
var. *alutalis* Grt.
42. *flavipunctalis* Geyer. Canada to Texas.
phalerosalis Walk. (Herminia).
heliusalis Walk. (Herminia).
belfragei Grt. (Renia).
pastoralis Grt. (Renia).

*In the *Bull. Brook. Ent. Soc.*, Vol. vii, 6, Mr. Smith states that this species "must be hereafter" referred to Heterogramma but in the *Revision* he refers it to Tetanolita, which I here follow, although he had previously remarked that it was "perfectly congeneric with *Phalænophana rurigena.*"

43. *pulverosalis* Sm. Colorado.

Gen. Hypenula Grt, 1876.
Type: *H. opacalis.*

44. *cacuminalis* Walk. Southern States.
biferalis Walk. (Herminia).
opacalis Grt. (Hypenula).

Gen. Phalænophana Grt. 1873.
Type: *P. rurigena.*
= Heterogramma Sm. nec Guen.

45. *pyramusalis* Walk. Canada to Texas.
gyasalis Walk. (Herminia).
rurigena Grt. (Phalænophana).

Gen. Gaberasa Walk.
Type: *G. ambigualis.*
= Eulintneria Grt. 1875.

46. *ambigualis* Walk. Canada to Texas.
♂ *bifidalis* Grt.
♀ *indivisalis* Grt.

Gen. Palthis Hübn., 1816 (1825?).
Type: *P. angulalis.*
= Clanyma Guen., 1854.
= Mardara Walk., 1859.

47. *angulalis* Hübn. Canada to Southern States.
aracinthusalis Walk. (Mardara).

48. *asopialis* Guen. Canada to Southern States.

Gen. Dercetis Grt., 1878.
Type: *D. vitrea.*

49. *vitrea* Grt. Eastern States to Texas; Canada (?)

50. *pygmæa* Grt. Florida and Texas.

Tribe Hypenini Grt., 1890.
Gen. Capis Grt., 1882.*

*I refer this genus here, following Mr. Smith, but with hesitation. I had regarded the moth as allied in shape of wing to Sisyrhypena. It resembles in ornamentation a very dark *Paracolax griscalis*, in which the lines are lost and only the paler curved terminal marking contrasts. I do not consider the absence of secondary sexual characters as excluding the moth from the Herminiini. Mr. Smith states that I gave him a specimen of *S. salicalis* labeled "Texas." I do not recollect having done so. Until I read the statement I was not aware that the European form occurred in North America. In any event I am unwilling that the species should be recorded from Texas on my authority. Mr. Smith's statement is incredible to me and surprises me; I kept no list of what I gave him, but I must disclaim any knowledge of the occurrence of *S. salicalis* in North America, having always believed the species to be represented by *S. interpuncta*, as hitherto assumed in all my papers on the subject. The Arizona material, coll. Neumœgen, has the subterminal space shaded with reddish brown; if it does not represent a species, it certainly does a good variety. No similar variation is noted of *S. salicalis*. Mr. Smith's figure, Pl. viii, 4, is misleading, not showing the discal dots of *interpuncta*.

Type : *C. curvata.*

51. *curvata* Grt. Canada to Middle States.

Gen. Salia Hübner, 1806 (1811).
Type : *S. salicalis.*
= Colobochyla Hübn. 1816 (1825 ?).
= Madopa Stephens, 1827.

52. *interpuncta* Grt. Texas ; Arizona.
saligna Zell.
var. *rufa* Grt.

Gen. Bomolocha Hübn., 1816 (1825 ?).*
Type : *B. fontis* (*crassalis*).
(Group Bomolocha.)

53. *manalis* Walk. Canada to Middle States.
54. *bijugalis* Walk. Canada to Texas.
pallialis Zell.
?*fecialis* Grt.
55. *baltimoralis* Guen. Canada to Middle States.
benignalis Walk.
laciniosa Zell.
56. *scutellaris* Grt. Canada to Middle States ; British Columbia.
57. *abalienalis* Walk. Canada to Middle States.
58. *annulalis* Grt. Texas.
(Group Macrhypena.)
59. *madefactalis* Guen. Canada to Texas.
♀ *damnosalis* Walk.
achatinalis Zell.
♂ *caducalis* Walk.
profecta Grt.
60. *deceptalis* Walk. Canada to Southern States.
♂ *perangulalis* Harvey.
damnosalis Sm., in error, Cat., 393.
(Group Euhypena.)
61. *sordidula* Grt. New York to Texas.
62. *toreuta* Grt. New York to Texas.
|| *internalis* Rob.
albisignalis Zell.
63. *umbralis* Sm. "Florida."
(Group Microhypena)
64. *citata* Grt. New York to Texas.
idæusalis Sm., in error, Cat. 392.
trituberalis Zell.

*The arrangement of the species in the *Revision* by Mr. Smith is virtually my own with the generic titles drawn in. I retain them here as designating groups, except Meghypena, which Mr. Smith says, "may again come to be used." I have never discontinued its use. I suggested that the material in this genus might belong to one species. The relationship of *profecta* escaped me.

Gen. Meghypena Grt., 1873.

65. *edictalis* Walk. Canada to Middle States.
♂ *vellifera* Grt.
♀ *lentiginosa* Grt.

Gen. Lomanaltes Grt., 1873.*
Type : *L. lætulus.*

66. *eductalis* Walk. Nova Scotia to Texas.
lætulus Grt.

Gen. Hypena Schrank, 1802
Type : *H. rostralis.*

67. *californica* Behr. Calif.; Vancouver ; Brit. Col.
68. *modesta* Sm. Los Angeles, Calif.
69. *decorata* Sm. California ; Vancouver.
70. *germanalis* Walk.
evanidalis Rob.
humuli Fitch nec Harris.
var. *olivacea* Grt. (pale form).
var. *albopunctata* Tep. (dark form).

Gen. Plathypena Grt., 1873.

71. *scabra* Fabr.
humuli Harris.
erectalis Guen.
var. *subrufalis* Grt. (rufous form).

The Reptilian Order Cotylosauria.

By E. D. Cope.

(*Read before the American Philosophical Society, November 15, 1895.*)

The characters of this order are as follows:

Quadrate bone united by suture with the adjacent elements. Temporal fossa overroofed by the following elements: Postfrontal, postorbital, jugal, supramastoid, supratemporal, quadratojugal. Tabular bone present. Vertebræ amphicœlous ; ribs one-headed. Episternum present. Pelvis without obturator foramen.

This order is of great importance to the phylogeny of the amniote

*In the *Bull. Brook. Ent. Soc.*, Vol. vii, 4, Mr. Smith says of his new Bomolocha that "it is nearest to the *lætulus* variety of *deceptalis*." Nowhere in the *Revision* can I find mention of this remarkable variety of *deceptalis*, pr. syn. or pr. var. I do not know what to make of the omission. Now, in the *Revision*, Mr. Smith adopts Lomanaltes and says that the insect "does convey a somewhat distinctive impression." As in *Agrotis opipara* and *Oneocnemis riparia*, etc. Mr. Smith's synonymy is here not full ; the omitted references tell against me and here cover up a remarkable error of judgment on his part.